

SECOND TEST. ECON 100D, FALL 2013. NAME: \_\_\_\_\_

Fill in the blanks, and answer in the spaces provided. Show your work.

**1. Monopoly.** I took a photograph, so I have the monopoly on selling framed prints of my photograph. I must sell all of the prints at the same price. Demand for my prints is defined by the marginal benefit schedule given in the second column below. Each print costs \$25 to produce.

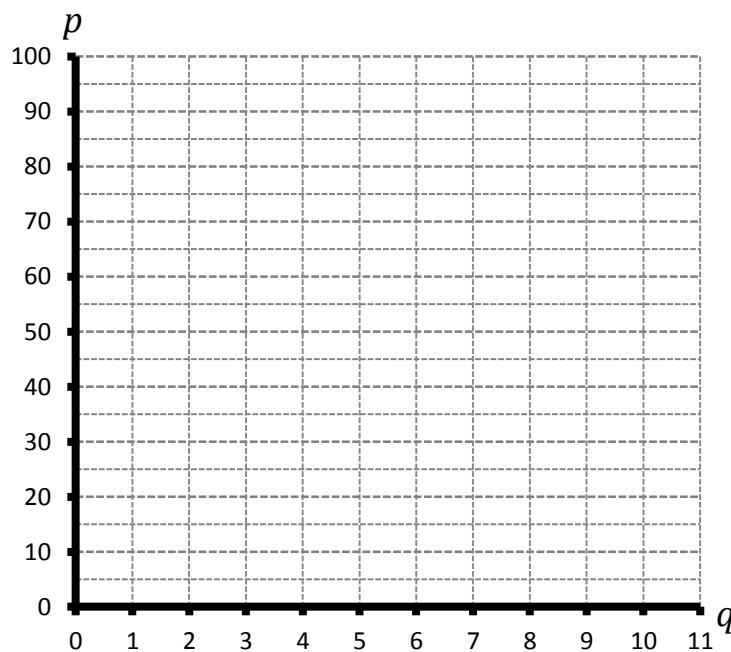
a) Fill in the columns for total revenue ( $R$ ) and marginal revenue ( $MR$ ), total cost ( $C$ ), and producer surplus ( $PS$ ).

b) To maximize my profit, I should sell a quantity of \_\_\_\_\_ action figures, at a price of \_\_\_\_\_. At this quantity and price, consumer surplus will be \_\_\_\_\_. When added to my producer surplus of \_\_\_\_\_, this gives a total economic surplus of \_\_\_\_\_.

c) If I lost my copyright, so that anyone could make and sell prints of my photo for a cost of \$25 each, the equilibrium price would be \_\_\_\_\_, the equilibrium quantity would be \_\_\_\_\_, consumer surplus would be \_\_\_\_\_, producer surplus would be \_\_\_\_\_, and total economic surplus would be \_\_\_\_\_.

d) Draw the marginal benefit ( $MB$ ), marginal revenue ( $MR$ ), and marginal cost ( $MC$ ) functions in the blank graph below. Shade in the area corresponding to the deadweight loss caused by my being a monopolist rather than a group of perfectly competitive firms.

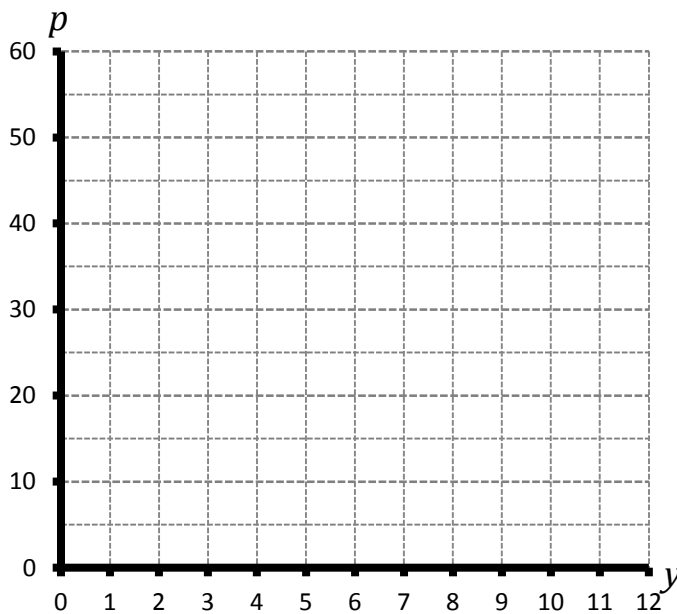
$Q$	$MB$	$R$	$MR$
1	100		
2	90		
3	80		
4	70		
5	60		
6	50		
7	40		
8	30		
9	20		
10	10		
11	0		



**2. Public goods** Ten roommates are deciding how much gunpowder to buy for the defense of their dorm suite. Each individual has the marginal benefit function  $MB_i = 6 - \frac{1}{2}y$ , where  $y$  is the quantity of gunpowder they buy, in pounds. The marginal cost of gunpowder is  $MC = 5$ .

a) If there is no possibility of collective action, and each person must decide privately how much gunpowder to purchase, then the equilibrium amount of gunpowder will be \_\_\_\_\_, and total economic surplus will be \_\_\_\_\_.

b) However, the socially optimal (efficient) quantity of gunpowder is \_\_\_\_\_, which gives a total economic surplus of \_\_\_\_\_.



c) On the graph to the left, draw the marginal individual benefit ( $MB_i$ ) and marginal social benefit ( $MSB$ ) curves. Mark the equilibrium without coordination ( $y^*$ ) and the optimum ( $y^o$ ). Shade in the area that represents the difference in economic surplus between the uncoordinated equilibrium and the optimum.

d) If the per-unit cost of gunpowder were 10 instead of 5, the equilibrium amount of gunpowder without coordination would be \_\_\_\_\_, and the optimal amount of gunpowder would be \_\_\_\_\_.

e) Consider a situation in which the equilibrium quantity of a public good in the absence of coordination is close to zero, and in which the government can only finance provision of the public good by taxing the market for a private good. Explain as clearly as you can why it might not be the best policy to provide a quantity of the public good that is optimal in the same sense as your calculation of  $y^o$  above.

**3. Negative externality.** Suppose the market for a certain good (e.g. 'gasoline') is perfectly competitive, but that the good causes a *negative* externality. Marginal benefit, marginal private cost, and marginal external cost are given by the functions below:

$$MB = 70 - q \qquad MC = 10 + q \qquad MEC = 10$$

**a) No policy.** Given that there is no policy to address the externality, find the equilibrium quantity, price, consumer surplus, producer surplus, external cost, and total economic surplus.

$$q^* = \underline{\hspace{2cm}} \qquad p^* = \underline{\hspace{2cm}} \qquad CS^* = \underline{\hspace{2cm}}$$

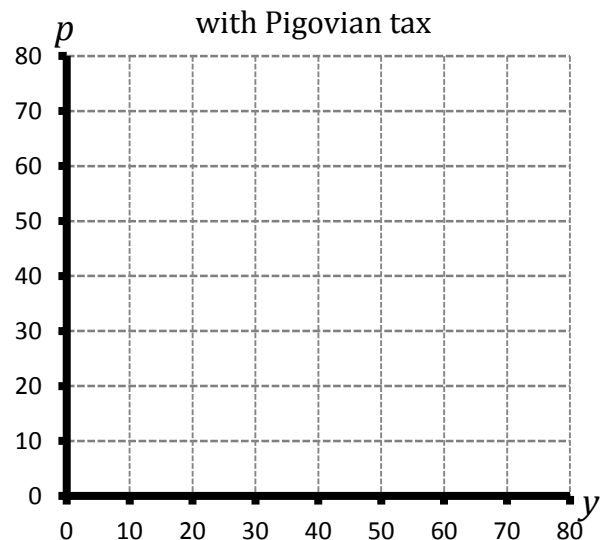
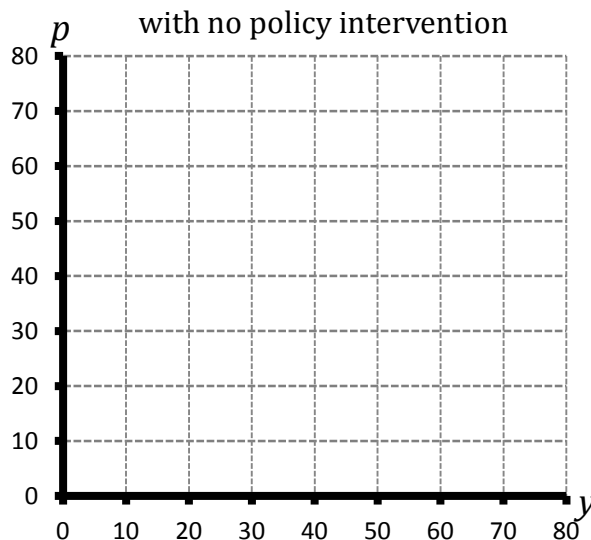
$$PS^* = \underline{\hspace{2cm}} \qquad EC^* = \underline{\hspace{2cm}} \qquad TES^* = \underline{\hspace{2cm}}$$

**b) Pigovian tax.** To maximize total economic surplus, the government should charge a tax of  $\tau^o = \underline{\hspace{2cm}}$  per unit to the consumers. Given this, find the equilibrium quantity, price, consumer surplus, producer surplus, external cost, government revenue, and total economic surplus.

$$q^o = \underline{\hspace{2cm}} \qquad p^o = \underline{\hspace{2cm}} \qquad CS^o = \underline{\hspace{2cm}}$$

$$PS^o = \underline{\hspace{2cm}} \qquad EC^o = \underline{\hspace{2cm}} \qquad GR^o = \underline{\hspace{2cm}} \qquad TES^o = \underline{\hspace{2cm}}$$

**c) Graphing.** On the left, graph the market with no policy intervention, labeling  $CS^*$ ,  $PS^*$ , and deadweight loss ( $DWL$ ). On the right, graph the market with the tax, labeling  $CS^o$  and  $PS^o$ .



#### **4. Reflection questions**

- a)** From society's point of view, what are the pros and cons of enforcing copyrights, as in the monopoly problem above?
  
  
  
  
  
  
  
  
  
  
- b)** In the negative externality problem above, who is made better off by the Pigovian tax? By how much are they made better off, altogether?
  
  
  
  
  
  
  
  
  
  
- c)** Who is made worse off by the Pigovian tax? By how much?
  
  
  
  
  
  
  
  
  
  
- d)** Under what conditions are roads most like pure public goods?
  
  
  
  
  
  
  
  
  
  
- e)** Under what conditions are roads most like excludable public goods?
  
  
  
  
  
  
  
  
  
  
- f)** Under what conditions are roads most like common resources?
  
  
  
  
  
  
  
  
  
  
- g)** What would be the problem with implementing the community rating and guaranteed issue provisions of the Affordable Care Act without the individual mandate provision?